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ABSTRACT

In response to changing management and budgetary strategies that have been driving decision making to the lowest administrative levels, institutional researchers have been attempting to identify indicators which can be used to evaluate institutional performance and progress. This paper reviews efforts to introduce departmental operational performance indicators at the University of Minnesota. A decision support schematic illustrates the instructional resource management tool that was developed. The diagram shows the relationships of the broad indicators, such as demand, fiscality, and productivity, to each other and to specific lower-level measures such as tuition revenue management, instructional cost management, curriculum management, enrollment and tuition management, and faculty course management. Two other programs, a "U2000 critical measures" process and incentives for managed growth, are also discussed. The former, an attempt to demonstrate to faculty how daily planning and operational decisions affect overall institutional goals, was judged to have failed. The initial attempts to establish an "incentives for managed growth" program (also termed responsibility-centered management), a financial strategy that emphasizes entrepreneurial activities and encourages decision making at the lowest administrative levels, were disappointing, and few of the university's departments were deemed able to use this strategy. (CH)

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Collegiate and Departmental Performance Indicators: The Measures that Matter!

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for Management Research, Policy Analysis, and Planning

This paper was presented at the Thirty-Seventh Annual Forum of the Association for Institutional Research held in Orlando, Florida, May 18-21, 1997. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

**Jean Endo
Editor
AIR Forum Publications**

Abstract

Largely in response to external pressures from legislatures and other funding sources, institutional researchers are devoting increasing efforts identifying valid indicators and benchmarks to evaluate institutional performance and progress. Unfortunately these measures are typically too nebulous, aggregated or distal for collegiate and departmental resource planning and allocation decisions. Without the ability to clearly translate institutional goals into operational decisions or policies, the probability that collegiate and departmental efforts will consistently contribute toward institutional goals significantly decreases. This paper identifies and discusses several departmental operational performance indicators for instructional resource management. These measures will be of greater utility for attaining institutional financial and programmatic objectives especially for institutions seeking new approaches to resource allocations such as Responsibility Centered Management. In addition, this paper suggests that colleges and departments will increasingly turn to interdisciplinary professionals who combine institutional research, financial and information technology expertise with an understanding of the informational needs to support daily operational decisions.

Overview

The choice of this year's (37th Annual) Association for Institutional Research forum theme, "Performance Indicators: Defining Measures that Matter" reflects the increasing competition for public and private funding and the resulting demand for greater value and accountability from higher education institutions. Largely in response to these external pressures, benchmarks, performance indicators, and measures of varying qualitative and quantitative nature have sprung up on the landscape. Internal recognition of the utility of operational performance measures for allocating resources and managing the vast array of enterprises that typically comprise universities, on the other hand, has been much slower to develop. Even when the impetus for improved operational performance measurement occurs within institutions, initial efforts often focus on adapting measures developed for external constituencies to meet internal needs. Institutional level performance indicators have limited utility for deans and department heads – the administrators who make the daily operating decisions that ultimately drive the institutional outcomes.

Current institutional benchmarks are important - they play a needed role in communicating achievements in basic terms to, and justifying or securing more revenues from, external constituencies. These efforts may be an effective short-term solution, however, if performance measurement and benchmarking activities in higher education do not extend beyond satisfying external constituencies, the true value-added benefits of these performance measures will be lost to institutions. The lack of performance indicators, designed to support internal daily operational decisions, must be addressed. The ability for colleges and universities to survive and flourish in the next millenium will require significant improvements in the strategic use of existing resources and large gains in the understanding and management of costs.

Despite the critical importance of operational performance measures, the absence of sufficient external pressures to force the issue combined with the following internal barriers substantially decreases the likelihood of their development and increases the operating risks of colleges and universities:

- Historical tradition of universities as loosely knit federations of independent colleges, departments and faculties.
- Deeply held perceptions that good education and good management are mutually exclusive.
- Lack of trust between faculty and central administrators.
- Insufficient management and financial expertise.
- Absence of easily accessible operating information.

As colleges and departments grapple with dramatic changes in their current environment and search for a management paradigm sensitive to the special needs of higher education, the necessity for a new type of institutional research professional has become increasingly apparent. This need is exacerbated by the expansion of management and budgetary strategies that drive decision-making to the lowest level in educational institutions. Colleges and departments will increasingly look to interdisciplinary professionals who combine institutional research, financial, managerial, and information technology expertise with an understanding of the informational needs to support daily operational decisions.

What drives the need for an interdisciplinary approach? There are several basic principles that underlie collegiate and departmental operational decision support:

- Optimal decisions require information from multiple varied areas including curricular, financial, student and human resources.
- Information must be integrated, intuitive and readily accessible to support daily decisions.
- Communication of information must respond to the wide variance of knowledge and experience of collegiate and departmental staff.

Collegiate and departmental experiences with central administrative offices, whether institutional research, budget, human resources or information technology, suggest these units are not well positioned to meet these needs. These offices tend to work at the proverbial 35,000 feet where collegiate and departmental trees, cars, and houses all look the same. Typical reports generated by central administrative units, aggregated at the organizational level and transaction-oriented,

often treat variations between colleges, and especially departments, as statistical noise. This approach can result in material differences between data provided by central administrative units and data needed by colleges and departments for making operating decisions. In the absence of skilled analytical staff, colleges and departments often lack the ability to articulate to central offices their decision support needs, or utilize available data to inform management decisions.

Recognition of both central staff and this new type of professional does not reflect duplication of function, but rather the fact that an organization requires expertise to support managerial decisions throughout all levels and increasingly in colleges and departments.

This paper will review the efforts we have made to introduce management tools for collegiate and departmental decision support at the University of Minnesota. Two additional relevant events at the University of Minnesota will also be discussed:

- The implementation of "U2000 Critical Measures" process and,
- The introduction of "Incentives for Managed Growth".

The first event refers to the efforts of central institutional researchers to establish benchmarks and performance indicators as part of the university strategic planning process and the failed attempts by a college to adapt these measures to their strategic planning and budget process. The second event refers to a change in the University of Minnesota budgeting process, similar to "Responsibility Centered Management", or RCM (Whalen, 1991), that exacerbates the need for an information-rich decision support environment for college and departmental administrators. These two developments have been key drivers in forcing recognition of the need for both staff and performance indicators that address collegiate and departmental operating issues.

In addition, operational performance indicators for instructional resource management will be introduced as well as the latest reports designs and user functionality available through cutting edge Web technology.

U2000 Critical Measures

In 1993, the University of Minnesota began a process to develop benchmarks for communication with external and internal constituencies regarding the progress and success of the U2000 campaign. Initial discussions between central institutional researchers and collegiate faculty and staff were designed to introduce the broad outlines of the process, the strategic areas of investment and the criteria for which the University and its units would ultimately be measured. The seven criteria identified were Quality, Centrality for the Academic Disciplines, Centrality for the State, Comparative Advantage, Efficiency, Effectiveness, and Demand.

The College of Liberal Arts, the largest college at the University of Minnesota consisting of the arts, humanities and social sciences departments, responded by charging a faculty advisory group with identifying valid measures for which the college could be assessed along these seven dimensions. This process was considered to be critical because it was believed that future resource allocations, both to the college from the university and to the departments from the colleges, would reflect success and progress using these benchmarks.

The college advisory committee quickly realized that the definitions imparted sufficient vagueness to create lengthy discussions of interpretations. For example, here is an abbreviated sample of a few themes (Infante and Kvavik, 1994):

- "Quality refers to the level of excellence aspired to and currently provided by academic programs and service units. This measure is ultimately a question of how well the values for which the University stands are expressed in its activities – in free inquiry, effective learning, and useful service to the citizens of the State....",
- "Comparative Advantage is about the unique characteristics that make a program particularly appropriate to this University. It is not sufficient that programs meet an important local or national need, or that they be unique within the State....",
- "Effectiveness concerns the degree to which agreed upon and desired results are achieved".

Despite the lack of consensus of the appropriateness of some of these themes, the committee members pressed on. The process, however, quickly hit an impasse as members of the committee, representing departments across the three main disciplines in the college, could not agree on the validity or applicability of a given measure because it inherently disadvantaged one discipline over another. For example, at a major research institution such as the University of Minnesota, the ability to garner sponsored research funding was considered the quintessential measure of quality – by the social scientists. The artists and humanists were very wary of such a measure even when it was suggested that comparisons would be limited to similar disciplines within the college, the same disciplines across peer institutions, or within a discipline across time. The measure was retained but only for a subgroup of departments.

Scholarly productivity was mutually recognized as a measure of quality (as well as effectiveness) but again, identifying a measure proved difficult. Both social scientists and humanists identified journal and book (or chapter) publications, but artists preferred exhibitions and performances. Even still, there was great debate and consternation about the “quality” of the quality measures (e.g. was the journal refereed, was the publication or performance internal or external, etc.). After a year of deliberation, over 51 departmental and collegiate measures, including an opportunity to submit a short departmental narrative of the “glories” of the unit, were identified. Many committee members, as their biannual terms were ending, felt the outcome and process were flawed and distrusted how the measures would eventually affect resource allocation decisions. In the end, the college settled on about a dozen measures to begin assessing in the first phase. Several of these measures had always been collected (e.g. number of graduate and undergraduate majors, faculty, student credit hours, sponsored expenditures, etc.). Other measures in this subgroup had not been collected, either due to the lack of available data (e.g. graduation placement) or the difficulty of collecting, summarizing and analyzing the data (e.g. faculty accomplishments from annual activity reports). As of today, no known progress has been made on these last two groups of indicators, and the impact of Incentives for Managed Growth on resource allocations has lessened the need to pursue these endeavors.

Despite uncertainty over the synergy between Incentives for Managed Growth and the U2000 Critical Measures process, the central process has continued with expansion of potential

measurement categories. Currently fourteen measurement categories have been identified during Phase III including the following (Whiteside, Hendel, Dunbar and Kvavik, 1997):

- compensation position among peer institutions for faculty and administrative staff,
- dollars in millions of total deferred renewal,
- mean high school rank of entering freshmen,
- percentage of students expressing satisfaction with essential student ,
- dollars of instructional direct expenditure per student relative to comparable ,
- percentage of all entering freshmen who graduate in five years,
- listing of scholarly "highlights" .

Three years later, colleges and departments are no closer to clearly understanding the relationship between their operational decisions and the overall institutional goals; yet there is no question that their daily planning and operational decisions ultimately affect these outcomes. Central strategic planning and measurement and collegiate and departmental operating decisions remain discrete activities with limited connection. In fact annual university requests for planning documents are viewed by colleges as a chore rather than an opportunity to integrate institutional goals and define how actions contribute to outcomes. Requests often are supplemented with collegiate data grids, designed to assist in the process, that either do not accurately reflect collegiate activities or have little overlap with actual informational needs. Higher education is learning to measure outcomes but learning to manage to an outcome remains beyond the grasp of most institutions.

Incentives for Managed Growth

The continuing decline in the percentage of public funding for higher education is forcing institutions such as the University of Minnesota to place greater reliance on tuition revenue, the creation of new revenue streams, cost containment, and productivity improvements to survive. This financial strategy emphasizes entrepreneurial activities and promotes driving incentives and decision making to the lowest possible levels of the institution. This shift requires changes in budgetary strategies that fall under the rubric of "Responsibility Centered Management",

"Responsibility Centered Budgeting", or in the case of the University of Minnesota, "Incentives for Managed Growth" ("Incentives for Managed Growth", 1996). While the opportunity for a unit to grow itself out of financial problems rather than cut itself out is inherently more positive, this budgeting approach, however, incurs some high risks that are not always clearly recognized. The primary risk resulting from this decision is that institutions are inexorably moving towards increasing privatization of public universities without developing the necessary expertise, management depth, and information systems to support this strategic decision.

This philosophical shift has repercussions throughout the organization. Decentralized units reap the direct revenue impact of their actions – both positive and negative. Unfortunately, decisions that have positive benefits to the unit may have deleterious effects on the rest of the institution. University central administrators have less of an impact to shape the overall funding structure of a college or department while remaining dependent upon those units to fulfill institutional missions and goals. The presence of collegiate and departmental operational performance indicators becomes *more critical* both to provide decision support to the units and to inform central units of the impact of these decentralized actions. Without the presence of critical information, especially early warning signals, to manage daily decisions, college and departmental administrators may make decisions that not only place their unit in financial jeopardy but the overall institution as well.

During a working group discussion, attended by both collegiate and central administrative staff, of the information needs required for implementation of this budgeting approach, the question was asked whether existing institutional data warehouses contained sufficient information. Central staff felt sufficient data existed, several collegiate staff did not know, while we felt there was a definite information shortfall. All the responses were accurate, given individual perspectives and experiences, and reflect disparate views on the information needed for colleges and departments to survive.

After a considerable amount of debate and discussion, the University of Minnesota announced in the summer of 1996, that a decision had been made to move forward with "Incentives for Managed Growth". Implementation would begin starting July 1, 1997 (FY98). This accelerated

timeline left little or no opportunity for development of the necessary information base and consensus on the quality of data to be used, much less strategies for delivering the information and training administrators and staff. The colleges under the direction of the Provost's Office for Arts, Sciences, and Engineering, however, were relatively advantaged since staff within the office had recognized the need to provide this information up to three years earlier. Most colleges have not yet begun to recognize the need much less develop systems to deliver the content of information and the type of tools required to meet the needs created by Incentives for Managed Growth and the mission of the colleges and departments.

Instructional Resource Management

There were several reasons that led to the decision to develop instructional resource management tools. The first reflects one of the primary missions of the colleges in Arts, Science, and Engineering (including, the College of Biological Sciences, College of Liberal Arts, General College, and the Institute of Technology) – teaching. These units enroll 80% of the undergraduate and 40% of the graduate students, generate over 21,000 full year equivalents (FYE) in instruction annually and include the efforts of over 1,000 faculty on the Twin Cities campus. Most of the resources in these colleges are devoted to personnel and supplies related to instruction. Any future growth or productivity gains would likely come from this area.

One of the key facets in Incentives for Managed Growth was that colleges would be able to retain the tuition revenue generated by their course offerings and enrolled students. (The eventual university formula would be 75% of the tuition generated by courses and 25% generated by students.) This incentive magnifies the decisions made by the colleges and departments in Arts, Sciences, and Engineering, given their mission and financial structure. Clearly, collegiate deans and departmental administrators would be making daily planning and operating decisions that would directly affect their bottom line. Unfortunately, many faculty and administrators misunderstood the concepts of this new budgeting approach and assumed that any action that generated more instruction (regardless of cost or the impact on other departments) would lead to a positive outcome. The goal therefore was not just to generate and disseminate operational measures of instructional activity but to place these measures in a context that begins

to inform departmental and collegiate staff of the multiple dimensions of instructional resource management. Figure 1 was developed to demonstrate a number of related and relevant dimensions within Instructional Resource Management:

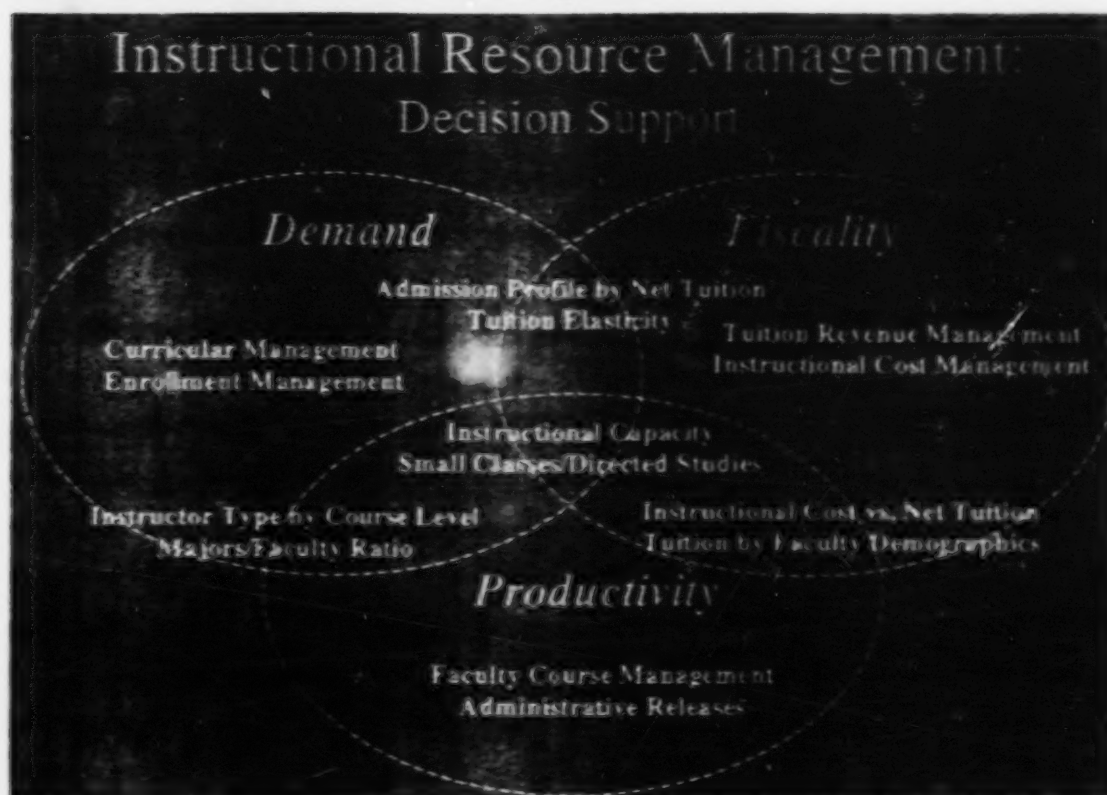


Figure 1. A Decision Support Schema for Instructional Resource Management

Three general dimensions (Demand, Productivity and Fiscality) are suggested with several examples of broad performance indicators arrayed by their respective spatial placement. This diagram has been useful in leading discussions with colleges and departments – they are familiar with many of the specific measures that are derived from these broad categories (e.g. course releases) and have begun to appreciate the cost and impact of their decisions. The creation of this general schema and the corresponding specific measures reflects in part the years of hands-on experience supporting operational planning and resource allocations as well as many discussions with collegiate and departmental staff at all levels and functions. Within each of these broad performance areas, specific indicators can be developed. Examples of several measures are included in Table 1.

Table 1. Examples of Specific Performance Indicators for Instructional Resource Management

General Category	Specific Performance Indicators
Tuition Revenue Management	Cross-College Student and Course Activity
Instructional Cost Management	Marginal Cost/Revenue by Course and Instructor
Curricular Management	Course Control Size vs. Average Section Size
Enrollment and Tuition Management	Net Tuition Yield by Admission Score
Faculty Course Management	Courses and SCH by Instructor FTE/Demographics
Faculty Course Management	Tuition Revenue Cost by Course Release

This diagram is not meant to be exhaustive or definitive, but rather to emphasize the value added approach of grouping a number of familiar and relevant performance indicators in a schema that promotes understanding and awareness of the interaction of collegiate and departmental decision-making.

CLARITY – Strategic System Solutions

The focus of this paper has been on the need for collegiate and departmental operational performance measures and the necessity to disseminate this information in a manner that supports decision support. A detailed explanation of the technical solution, including front and back-end architecture and application development strategies can be found elsewhere (Boerner, Grotevant and Moloney, 1996; Grotevant and Moloney, 1996; Grotevant, Gentry and Moloney, 1997). Nevertheless, for readers to fully appreciate the power of an information-rich environment at the desktop responsive to the needs of decision-makers, they are invited to explore the content and functionality that has currently been developed at the CLARITY web site <http://www.clarity.umn.edu>. Decision support is much more than data reporting – more than converting a paper report to an electronic report. Decision support is the creation of intuitive reports that reflect the daily operational questions that face collegiate deans and department chairs, that frame the issues in such a way as to promote discussion and understanding. Decision support includes giving users information at their desktop, integrated from multiple administrative databases, reconcilable to university level transactional reports, but including the

business rules and logic to reflect the reality of operations. Decisions support allows user functionality to aggregate and disaggregate data, select and manipulate variables, and explore exceptions all in a responsive and incisive manner.

Summary

Institutional researchers play a key role in the future success of higher education. Performance indicators and benchmarks are invaluable in communicating to external constituencies the positive and negative outcomes reflecting the administrative decisions. Aggregate, high-level benchmarks, however, are only part of the required performance measure landscape - decision support for colleges and departments are also needed. This niche can be met but it requires a new breed of professional staff equipped with both a broad interdisciplinary experience in institutional research, budgeting, management, human resources and information. Combined with a wealth of knowledge in the daily operational decisions occurring in colleges and departments, these individuals are receptive to collegiate and departmental needs, and are trusted by these units. These professionals do not "fit" in central administrative units but their success in developing management tools can lead to the overall success in attaining institutional missions and goals.

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